REMARKS

By this Amendment, claim 6 is amended to place the claims in proper condition under 35 U.S.C. § 112, 2nd paragraph. Additionally, Applicant presents herewith the following additional arguments with respect to the claimed taper angle and water absorption ranges. Applicant respectfully submits that these arguments overcome the Examiner's rejection under 35 U.S.C. § 103(a), based on routine optimization of a disclosed range.

TAPER RANGE

The claimed taper range is outside of the range disclosed in the cited art of record. The Examiner has acknowledged this deficiency of the art of record, and proposes to overcome this deficiency by "routine optimization". Due to the criticality of the claimed taped range as discussed in the application, the obviousness rejection based on optimization of ranges has been rebutted and should be withdrawn.

The taper angle range of Bito is 3.57×10^{-3} to 3.7 to 10^{-3}, and clearly falls completely above of the claimed range of 0.5×10^{-3} to 3.5×10^{-3} (i.e., no overlap of ranges). Further, Bito itself provides no motivation for applying anything other than the ranges disclosed therein. In order for the optimization to be routine and thus obvious, the claimed range cannot be critical, there cannot be unexpected results in the claimed range.

Applicant's claimed ranges for taper angle are critical, because the results are been unexpected, as borne out in the explanation in the paragraph bridging application pages 20-21. More specifically, at the paragraph bridging pages 20-21, the specification specifically states that when the taper angle is greater than 3.5×10^{-3}, there is a problem, in that the resin pipe is no longer uniform in physical property, which causes problems associated with dimensional

accuracy and electrical properties, such that the resin pipe cannot be properly used as a base for photosensitive drums. This is because the taper angle is too steep, and is the case in Bito.

On the other hand, if the taper angle is less than 0.5×10^{-3}, the moldability of the resin pipe is affected, and the pipe cannot be properly used.

Thus, it is this unexpected result within this claimed range that makes the claimed range critical. Accordingly, it is believed that one skilled in the art would not have been motivated to engage in routine experimentation to arrive at the claimed range. Bito does not teach or suggest the problems solved by the claimed invention, and thus, there is no motivation to optimize outside this range. Accordingly, it is believe that the obviousness rejection has been properly rebutted by showing the criticality of the ranges based on the unexpected results in a specific range, as supported by the specification of the application.

WATER ABSORPTION

As described at application page 16, lines 29 to 35, the polyamide resin having a high water absorption is blended with a resin having a water absorption no higher than 0.3% as recited in independent claim 1. The resulting alloy resin is used as the base material. The resulting resin compound has a low water absorption and is subject to little dimensional change in a high-temperature, high-humidity environment. More specifically, the alloy resin composed of the polyamide resin and the blending resin gives a molded product which has better dimensional stability than that obtained from the polyamide resin alone.

The foregoing properties of the invention are demonstrated by Referential Examples as shown in application Table 1. The water absorption and dimensional stability of the molded product under a high-temperature high-humidity condition are greatly improved when the

polyamide resin is blended with the blending resin having a low water absorption, as recited in claim 1.

Bito does not disclose a combination of a nylon and a resin having a water absorption no higher than 0.3% from Bito (as acknowledged by the Examiner).

Column 3, lines 4-9 of Nishimuro discloses that thermoplastic resin includes polycarbonate, polyethylene terephthalate, polybutylene terephthalate, polyamide (nylon 6, nylon 66 or the like), polyphenylene sulfide (PPS) and polyacetal. However, Nishimuro fails to disclose or suggest that a polyamide resin is blended with a resin having a water absorption no higher than 0.3% (as recited in claim 1).

The Examiner states that Nishimuro teaches the use of nylon 6 in the making of a resin pipe (column 2, lines 64-67; column 3, lines 1-8) for the purpose of making a photosensitive drum having enhanced reliability (column 1, lines 65-66; column 2, lines 1-3). However, Nishimuro fails to disclose and suggest that a polyamide resin is blended with a resin having a water absorption no higher than 0.3%. In Examples (Table 1) of Nishimuro et al., all Examples use nylon 66 and polyphenylene sulfide.

As described in the present specification, the blending resin used in the present invention has a low water absorption and is not substantially subject to dimensional change in a high-temperature, high-humidity environment. Nylon 65 has a value of about 0.6-3%, and nylon has a value of 0.7-1.8%. These values are outside of the claimed 0.3% range.

The presently claimed invention is directed to solving a problem not addressed in the prior art: molded products with such a high water absorption may pose a problem with dimensional accuracy. That is, they expand due to water absorption when they are allowed to

stand in a high-temperature high-humidity atmosphere greater than or equal to 30°C and greater than or equal to 90 % RH for 2 to 3 hours. Expansion may adversely affect the function of the photosensitive body and hence greatly aggravates the image quality.

Since Nishimuro teaches the use of nylon 6 in a single as shown in its example, Applicant respectfully submits that Nishimuro would include the above-discussed faults. Thus, Nishimuro teaches away from the claimed alloy resin.

While Shintani discloses a water absorption no higher than 10% and does not disclose the lower range, claim 1 recites a water absorption range of less than 0.3%. The specific examples cited in the table at columns 13-14 all have a lower bound that is significantly greater than 0.3%.

More specifically, the resin having a water absorption no higher than 10% disclosed by Shintani is a nylon copolymer having a water absorption of 1.5%, 2%, or 4% (Applicant refers the Examiner to Shintani, Table 1). Shintani does not disclose or suggest a resin having a water absorption no higher than 0.3%.

In addition, Shintani does not teach use of an alloy resin. With regard to the optimization of the water absorption stated by the Examiner, it is very difficult to anticipate a water absorption of less than 0.3% from the description of Shintani. That is, Shintani does not teach or suggest a water absorption of less than 0.3%. Applicant refers the Examiner to column 3, lines 55-65 of Shintani. The lower limit of the water absorption of nylon copolymers described in Shintani is 0.5%, which fails to reach the claimed upper limit of 0.3%.

Thus, residual potential becomes high and fogs may appear on the ground if such a modification was made to the cited art of record. That is, Shintani does not recommend use of

nylon copolymers having a water absorption of less than 0.5%. Thus, Shintani does not teach or suggest the claimed water absorption of less than 0.3%.

For at least these reasons, Applicant respectfully requests withdrawal of the 35 U.S.C. § 103 rejection with respect to independent claim 1, and submits that its dependents (2, 4, 5) are allowable for at least the same reasons as independent claim 1.

Entry and consideration of this Amendment are respectfully requested.

Respectfully submitted,

Mainak H. Mehta
Registration No. 46,924

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

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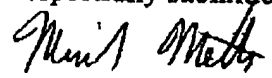
CERTIFICATION OF FACSIMILE TRANSMISSION

Sir:

I hereby certify that the above identified correspondence is being facsimile transmitted to Examiner Marc A. PATTERSON at the Patent and Trademark Office on August 11, 2003 at 703-872-9310.

Respectfully submitted,



Mainak H. Mehta